

THE
ONTARIO WATER RESOURCES
COMMISSION

WATER POLLUTION SURVEY

of the

TOWNSHIP OF TAY

COUNTY OF SIMCOE

1968

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Report

on a

Water Pollution Survey

of the

TOWNSHIP OF TAY

County of Simcoe

March, 1968

District Engineers Branch

Division of Sanitary Engineering

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R E P O R T

THE ONTARIO WATER RESOURCES COMMISSION

INTRODUCTION

This survey was conducted to assess the conditions with reference to the quality of the watercourses within the Township of Tay. Water pollution surveys are performed routinely and upon request. They are designed to locate and record existing or potential sources of pollution within the survey area. Where these sources are noted, recommendations with respect to their abatement are made to the parties concerned.

Surface water samples were collected from the drainage courses within the township over the period of one year. These sample results as well as the results of the bacteriological samples taken within this same period by the Midland and Orillia offices of the Simcoe County Health Unit, were studied to locate and confirm the extent of pollution sources within the township.

The appendices to this report include:

- a tabulation of the results of the samples taken
- a map of the township showing sample point locations
- an explanation of the significance of laboratory results

I GENERAL

Location

The Township of Tay is located in the central-northern section of the County of Simcoe. The population (2,853-1967 Municipal Directory) is concentrated mainly along the shoreline of Georgian Bay

at the northern portion of the township. The population figure increases considerably during the summer influx of cottagers and tourists.

Drainage

Drainage throughout the township is generally northward into Georgian Bay. The major drainage courses within the township include:

- 1) Hog Creek
- 2) the Coldwater River
- 3) the North River
- 4) the Sturgeon River
- 5) the Wye River

II WATER SUPPLY

The major water works systems in operation in the Township of Tay are as follows:

	<u>Waubauskene</u>	<u>Galloway Devel. Ltd.</u>	<u>Martyr's Shrine</u>
Owner	P.U.C.	Private	Private
Source	Georgian Bay	Matchedash Bay	Spring
Services	*Winter-450 Summer-1000	Motel Restaurant Gift Shop Trailer Pk.	Shrine
Treatment	Chlorination	Screening, Chlorination Activated Carbon	Chlorination
	<u>Sunnyside</u>	<u>Portage Park Estates</u>	<u>Sandy Bay</u>
Owner	Rate Payers Assoc.	Private	Shareholders
Source	Spring	Drilled Well	Georgian Bay
Services	300 persons	14 homes	17 Cottages
Treatment	Batch Chlorination		Electro-Katodyn process

* There have been request for the P.U.C. to extend the facilities to supply water outside the designated area.

In the past, the bacteriological quality of the water used within the township has been within the objectives set by the Ontario Water Resources Commission.

At present, the township is negotiating with the Town of Midland and the Village of Port McNicoll to have the built-up areas of the township adjacent to these municipalities included in the plans for expansion of their respective water-supply systems.

III SOURCES OF POLLUTION

Sanitary Waste Disposal

Domestic sewage from the majority of the residences is disposed of by private privies or by septic tank and sub-surface tile field systems. Supervision of the installation of private sewage disposal units is undertaken by the Simcoe County Health Unit. There are no effluent-producing sewage treatment plants in the township proper.

Agriculture

Where farms lie adjacent to a watercourse there is a possibility that seepage or runoff, contaminated from manure piles or manure spreading, will pollute the watercourse. The degree of this pollution and the frequency of objectionable pollution levels is a direct result of a number of conditions. Some of the main determining conditions are given on the following page.

- 1) Precipitation - frequency and quantity
- 2) Drainage patterns of the land
- 3) Assimilation of the watercourse
- 4) The type and extent of farming along the watercourse

In the Township of Tay, the presence of farms along the Hog River probably accounts for the high coliform counts as indicated in the appended results.

Dump Sites

Within the township there are two designated dump sites:

<u>Location</u>	<u>Lot 13 Concession 7</u>	<u>Lot 9 Concession 10</u>
Method	Burn and cover	Trench, fill and cover
Material	No liquid or industrial wastes	No liquid or Industrial wastes
Comment	Inspected and found no pollution problems exist - none foreseeable	Inspected and found no pollution problems exist - none foreseeable

Great Lakes Shipping

In past winters there have been confirmed reports of the dumping of garbage and sewage from the Great Lakes ships wintering at the various docks in the township. The dumping of seacock filler (grease) at the conclusion of the winter docking period when the ships were again put into service has been noted. This Commission, with the assistance of the Simcoe County Health Unit has obtained the co-operation of the shipping companies concerned in stopping the dumping of seacock filler and is presently working to ensure the cessation

of future garbage dumping on the ice. Any indication of recurrence of these practices should be reported to the Commission immediately so that an investigation may be conducted while the condition exists.

Pleasure Boats

This area has an appreciable number of large pleasure craft docked in sheltered areas just off Georgian Bay. In the past, this type of boat has been a source of pollution through the indiscriminate dumping of garbage and the use of marine toilets with no treatment of the discharge.

After June 1, 1969 a regulation under the Ontario Water Resources Commission Act will provide for the control of the discharge of sewage and garbage from pleasure boats into any water in the Province.

"This regulation provides that any pleasure boat (owned by an Ontario resident) that has sleeping accommodation must be equipped with a marine toilet and an approved device which will store or dispose of human sewage. The discharge of such sewage in these pleasure boats and the installation of the toilet and the approved device are also controlled by the regulation to ensure that the sewage is prevented from entering any water."*

* Facts for Boaters on Sewage Control in Pleasure Boats (OWRC Publication).

Note: - Copies of this booklet may be obtained from the Ontario Water Resources Commission, Division of Sanitary Engineering, 801 Bay Street, Toronto 5, Ontario.

Waubashene

The community of Waubashene is serviced on a private basis by septic tank and tile bed systems. A survey of the area revealed several possible septic tank discharges to the community drainage system. In the event of a rainfall, any septic tank effluent would be conducted into Georgian Bay by the open ditch drainage systems. Malfunctioning systems must be corrected but it is felt that the problem would be best solved on an individual basis rather than by instituting communal treatment.

The coin laundry in Waubashene uses a covered concrete holding tank to retain laundry wastes. Reportedly, this tank is pumped regularly and the contents dumped at an approved site. Continued caution must be exercised to ensure that this laundry waste is prevented from reaching any drainage area.

High coliform bacteria counts were indicated in the samples taken from the stream that enters Georgian Bay just east of the water works and the stream that enters Georgian Bay beside the marina.

IV GENERAL DISCUSSION OF SAMPLE RESULTS

Of the 42 samples taken from Georgian Bay during the study period, three (taken July 12/67) indicated bacteria counts in excess of the OWRC objective of 2,400 coliform bacteria per 100 ml of solution. A resampling (August 23/67) of the sample points

- 1) near Sturgeon Point
- 2) at Crystal Beach near Victoria Harbour
- 3) north of Midland Point

no longer indicated the excessive level of pollution. In each instance, the bacterial counts were well within OWRC objectives.

These results as well as the results of the extensive sampling by the Simcoe County Health Unit indicate that the bacteriological quality of Georgian Bay is usually satisfactory. The fact that the date of the bad samples coincides with a period of high precipitation and the fact that the ground water level of this area was at its highest in many years would seem to indicate that a localized contamination occurred when pollutants from flooded septic tanks were conducted to the lake by the surface runoff.

The appended results indicate that only the Coldwater River and the Hog River consistently demonstrated coliform bacteria levels in excess of OWRC objectives. In the instance of the Hog River, contamination is probably due to the pollution of the surface runoff by the many farm fields bordering the river. The pollution of the Coldwater River is known to be the result of the absence of sewage treatment facilities for the Village of Coldwater. At present, work is being carried on to provide the necessary treatment facilities in the village. When these facilities are in operation the contamination of Coldwater River within the Township of Tay should be markedly reduced.

V SUMMARY

This report was prepared to assess conditions, with respect to the quality of the water within the Township of Tay.

The samples from Georgian Bay were generally satisfactory.

The Hog Creek and the Coldwater River samples consistently revealed high coliform bacteria counts. The adverse condition of Hog Creek is due probably to contamination from farm runoff, while the condition of the Colwater River is a result of the lack of sewage treatment facilities in Coldwater.

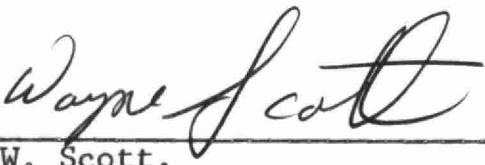
There is some indication that there may be several malfunctioning septic systems in Waubaushene. These problems would probably be best solved privately by each of the home owners involved.

VI RECOMMENDATION

When individual septic tanks have been noted to be discharging an effluent, the individual owners should be directed to correct the situation.

/elc

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APPENDICES

INTERPRETATION AND SIGNIFICANCE OF LABORATORY RESULTS:

The analyses employed to determine the quality of these samples were Biochemical Oxygen Demand (BOD), solids and the enumeration of coliform organisms.

A. Biochemical Oxygen Demand (BOD):

The biochemical oxygen demand of sewage, industrial wastes or polluted waters is the amount of oxygen required during the stabilization of the decomposable organic material by aerobic biochemical action. The completion of the test requires five days under a controlled incubation temperature of 20 degrees Centigrade. High BOD is indicative of organic or chemical pollution. The Commission's objective for surface water quality is a 5-day BOD of not greater than 4 ppm (parts per million).

B. Solids:

The value for total solids, expressed in parts per million (ppm) is the sum of the values for the suspended and dissolved matter in the water. Concentration of suspended solids, which indicates the measure of undissolved solids of organic or inorganic nature are generally the most significant of the solids analyses in regard to surface water quality. The effects of suspended solids in water are reflected in difficulties associated with water purification, deposition in streams and the injury to the habitat of fish.

C. Bacteriological Examination:

The Membrane Filter Technique is used to obtain a direct count of coliform organisms and is reported per 100 millilitres of the sample. The presence of these organisms indicates pollution from human or animal excrement or from some non-faecal forms. The Commission objective for bacteriological quality of surface water in Ontario is 2,400 coliform organisms per 100 ml of sample.

TOWNSHIP OF TAY

GEORGIAN BAY SAMPLE RESULTS

TABLE I

<u>Sample Point</u>	<u>Description</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Total (ppm)</u>	<u>Solids</u>		<u>Diss. (ppm)</u>	<u>Coliforms per</u>	
					<u>Susp. (ppm)</u>			<u>100</u>	<u>ML</u>
GBLL-1	Little Lake at Port Severn Bridge.	Sept./66						52	
		Aug. 2/67						40	
GBLL-2	" " "	Aug. 2/67						100	
GB-2	Georgian Bay at Bluff Point.	Sept./66						48	
		Aug. 2/67						1,040	
GB-3	Georgian Bay at Long Point.	Sept./66						52	
		Aug. 2/67						240	
GBMSHB-4	Matchedash Bay at Highway 103.	Sept./66	1.1	198	5		193	36	
		Aug. 2/67	1.6	170	6		164	296	
GBMSHB-5	Matchedash Bay north of Fesserton swimming area.	Sept./66	0.9	220	8		212	2,200	
		Aug. 1/67	1.8	200	1		199	280	
GBMSHB-6	Matchedash Bay at Marina,	Sept./67	1.0	220	7		213	690	
GBMSHB-7	East shore of Matchedash Bay at sideroad north of North River.	Sept/66	1.9	210	8		202	32	
		Aug. 1/67	2.1	200	1		199	1,700	

TABLE I (CONTD)

Sample Point	Description	Date	5-Day BOD (ppm)	Total (ppm)	Solids		Coliforms per 100 ML	
					Susp. (ppm)	Diss. (ppm)		
GB-8	Georgian Bay at Waubauskene Water Works.	Sept./66	1.1	138	3	135		76
		Aug. 1/67	1.6	138	6	132		110
GB-9	Georgian Bay at Conversion Rd. west of Waubauskene.	Sept./66						200
		July 12/67	2.9	120	10	110		1,150
		Aug. 24/67						60
GB-10	Georgian Bay near Sturgeon Point.	Sept./66						80
		July 12/67	1.2	92	3	89		31,000
		Aug. 24/67						36
GB-11	Georgian Bay at Crystal Beach Victoria Harbour.	Sept./66						232
		July 12/67	3.0	138	31	97		33,000
		Aug. 24/67						600
GBHB-12	Hog Bay near MacMillan Station.	Sept./66	1.8	202	111	91		24
		July 12/67	1.5	106	3	103		460
GB-13	Georgian Bay near Paradise Point.	Sept./66						60
GBMB-14	Midland Bay at Elimere Point.	Sept./66	1.8	300	144	156		600
		July 12/67	2.6	66	6	60		700
GBMB-15	Georgian Bay at Midland Point.	Sept./66						110
		July 12/67						370

TABLE I (CONTD)

Sample Point	Description	Date	5-Day	Solids		Diss.	Coliforms per	
			BOD (ppm)	Total (ppm)	Susp. (ppm)		100	ML
GB-16	Georgian Bay north of Midland Point.	Sept./66	1.8	565	337	228		60
		July 12/67	0.7	68	1	67		15,000
		Aug.23/67						4
GB-16-B	Georgian Bay north of Midland Point.	Aug.23/67						15
GB-16-C	Georgian Bay north of Midland Point.	Aug.23/67						15
GB-16-D	Georgian Bay north of Midland Point.	Aug.23/67						15
GB-17	Georgian Bay between Watson Point and Asylum Point.	Sept./66	1.4	116	11	105		20
		July 12/67	1.4	82	1	81		188
GB-18	Georgian Bay at Asylum Point.	Sept./66	2.2	120	16	104		200
		July 12/67	1.1	86	2	84		660

TOWNSHIP OF TAY

RIVER SAMPLE RESULTS

TABLE II

<u>Sample Point</u>	<u>Description</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Total (ppm)</u>	<u>Solids Diss. (ppm)</u>	<u>Susp. (ppm)</u>	<u>Coliforms per 100 ML</u>
CN-1.1	North River at 14th Concession.	Sept./66	1.8	248	24	224	110
		Aug. 1/67	2.3	222	5	217	Lab. accident
C-1.8	Coldwater River just north of Coldwater.	Sept./66	1.1	220	10	210	17,000
		Aug. 1/67	1.5	254	18	236	40,000
		Aug. 24/67					6,000
S-0.0	Sturgeon River at the mouth.	Sept./66	1.5	226	6	220	100
		July 12/67	2.4	168	18	150	1,270
S-0.4	Sturgeon River at Highway 12.	Sept./66	1.0	262	6	259	148
		July 12/67	1.8	208	33	175	970
S-1.58	Sturgeon River at first sideroad south of Highway 12.	Sept./66	1.4	226	6	223	48
		July 12/67	2.1	156	27	129	780
S-3.95	Sturgeon River at 2'nd sideroad south of Highway 12.	Sept./66	1.0	226	8	218	1,400
		July 12/67	1.4	186	21	165	590
H-0.0	Mouth of Hog River.	July 12/67	2.2	214	38	176	51,000
		Aug. 23/67					2,100

TABLE II (CONTD)

Sample Point	Description	Date	5-Day BOD (ppm)	Total (ppm)	Solids		Coliforms per		Comments
					Susp. (ppm)	Diss. (ppm)	100	ML	
H-0.35	Hog River at Highway 12.	Sept./66	1.7	82	10	72		160	
		July 12/67	2.3	198	35	163		30,000	
		Aug.24/67						3,100	
E-1.5	Hog River between Lots 10 & 11, E-W sideroad.	Aug.24/67						2,800	
		Aug.24/67						4,000	
H-4.0	Hog Creek at 5th Concession.	Sept./66	1.1	198	5	193		870	
		July 12/67	1.5	106	15	91		5,000	
		Aug.23/67						7,000	
W-0.0	Wye River at mouth.	Sept./66	1.9	394	82	312		200	
		July 12/67	3.3	315	45	240		880	
W-1.0	Wye River at bridge on Highway 12.	Sept./66	2.0	226	9	217		220	
		July 12/67	1.7	182	9	173		370	
		Aug.24/67							
SC-0.0	Sucker Creek at the mouth.	Aug.23/67						930	
SC-1.2	Sucker Creek at first subdv. road.	July 12/67 Aug.23/67	13	246	98	148		8,000 43	the sample from standing water of the creek -green with susp.matter.
SC-2.4	Sucker Creek at sideroad.	July 12/67 Aug.23/67	3.1 No flow perceptible	270 water stagnant.	4	266		52,000	

